

A New Record of *Scatella calida* (Diptera: Ephydriidae) to Korea, with a Key and a Checklist for the Genus

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ABSTRACT

Flies of the genus *Scatella* are small and dark-gray, and many species have distinctive whitish spots on their gray wings. Most species are found in damp environment, such as the borders of marshes, seashore areas, swamps, lakes, ponds, streams, and paddy fields. The Korean shore fly genus *Scatella* Robineau-Desvoidy has been taxonomically noted. A total of five species have been identified: *S. calida* Matsumura, 1915, *S. nipponica* Miyagi, 1977, *S. obsoleta* Loew, 1861, *S. paludum* (Meigen, 1830), and *S. tenuicosta* Collin, 1930. This is the first report of *S. calida* Matsumura, 1915 from Korea. A key to the Korean *Scatella* species and photographs of the external features have been provided.

Keywords: new record, *Scatella calida*, Ephydriidae, Korea

INTRODUCTION

Scatella Robineau-Desvoidy is one of the largest genera in Ephydriidae, and includes five subgenera (Mathis and Zarnicki, 1995). The adults are small, dark-gray flies, and many species have distinctive whitish spots on their gray wings. Most species are found in damp environments, such as the borders of marshes, seashore areas, swamps, lakes, ponds, streams, and paddy fields. The adults feed on algae, bacteria, yeast, or decaying animals and plants (Suh and Kwon, 2006). *Scatella stagnalis* is often considered a greenhouse pest (Vänninen, 2001). Larvae feed on algae and are found in areas where algae grow, and adult shore flies are capable of transmitting *Pythium* and other root disease organisms (Sanderson, 2017).

The first known record of *Scatella* in Korea was by Suh and Kwon (2006), who reported four species: *S. callosicosta* Bezzi (junior synonym of *S. obsoleta* Loew, 1861), *S. nipponica* Miyagi, *S. paludum* (Meigen), and *S. stagnalis* (Fallén) (misidentification of *S. tenuicosta* Collin, 1930).

In this study, we report *S. calida* Matsumura, 1915 for the first time in Korea. A key and checklist of Korean *Scatella*

species are provided.

To examine the taxonomic characters, distal abdominal or genital segments were removed using a pair of minute insect pins. For genital structure dissection, the removed body parts were cleared with 10% potassium hydroxide (KOH). The genital segments were then mounted in glycerin jelly and observed using either a stereoscopic microscope (Olympus SZX 16; Olympus, Tokyo, Japan) or a compound microscope (Olympus BX50). Photographs of the specimens were taken using an Olympus camera (DP 71) (Suh and Kwon, 2016).

All specimens examined in the present study are deposited in the collection of the School of Applied Biosciences at Kyungpook National University, Daegu, Korea.

SYSTEMATIC ACCOUNTS

Order Diptera Linnaeus, 1758

Family Ephydriidae Zetterstedt, 1837

¹*Genus *Scatella* Robineau-Desvoidy, 1830

Korean name: ¹*알락물가파리속

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Robineau-Desvoidy, 1830: 801. Type species: *Scatella bucata* Robineau-Desvoidy, 1830.

Trixostomus Rondani, 1856: 130. Type species: *Ephydra stagnalis* Fallen, 1813.

Strandella Duda, 1942: 30 (as subgenus of *Lamproscatella*). Type species: *Scatella silacea* Loew, 1860.

Teichomyza Macquart, 1835: 534. Type species: *Teichomyza fusca* Macquart, 1835.

Neoscatella Malloch, 1933: 9. Type species: *Neoscatella atra* Malloch, 1933.

Diagnosis. Two larger laterocline fronto-orbital bristles; arista almost bare or weakly pubescent; two or three dorsocentral bristles; supra-alar bristle reduced, length approximately half or less than that of postalar bristle; costa vein extending to apex of vein M_{1+2} ; tarsal claws short, pulvilli well developed (Suh and Kwon, 2006).

Key to the Korean *Scatella* species

1. Second costal section stout in male 2
– Second costal section not stout in male 3
2. Wing spots faint; second costal section swollen and almost touch R_1 vein in male *obsoleta* Loew
– Wing spots clear; second costal section stout and not touch R_1 vein in male *calida* Matsumura
3. Face silvery gray with some faint greenish and brownish tinges *paludum* (Meigen)
– Face dull black with brownish tinges 4
4. Strong postsutural acrostichals present; 2–3 strong dorsocentral setae present *nipponica* Miyagi
– Strong postsutural acrostichals absent; 2 strong dorsocentral setae present *tenuicosta* (Fallén)

¹**Scatella (Scatella) calida* Matsumura, 1915 (Fig. 1)

Scatella calida Matsumura, 1915: 223 (type locality: Japan, Sapporo).

Body length 23–26 mm, wing length 23–26 mm. Head as long as wide; mesofrons dull black with sparsely brownish pollen; parafrons brownish, pollinose; 2 strong fronto-orbital setae and 1–2 weak accessory bristles; face dull with dark brown tinges; cheek heavily pollinose, mostly brown with some faint greenish tinges; antenna mostly black, arista short pubescent (Fig. 1A–C). Thorax generally dull; mesonotum dark brown; pleuron brownish, pollinose; 1 strong prosutural acrostichal seta; 4 dorsocentral setae (1 : 2 : 1) with presutural and the first postsutural weak, the second postsutural seta strong; anterior notopleural seta longer than posterior one; 1 mesopleural seta strong, and 1 sternopleural seta

strong and approximately as long as anterior notopleural seta. Legs dull; femur with some faint greenish tinges; fore femur with a row of five long posterovental bristles. Wing densely brownish tinged, with 4 distinct and 1 faint white spots; spot between r_{2+3} and r_{4+5} large and close to the apical spot between r_{4+5} and m_{1+2} ; second costal section black and stout in male, more slender in females than in males; halter dull yellow (Fig. 1D, E). Abdomen generally dull, brownish, pollinose with some faint greenish tinges; each abdominal sclerite anteriorly darker. Male T4 shorter than T5, male genitalia shown in Fig. 1F–H.

Material examined. Korea: 5♂5♀, Gyeongsangbuk-do: Mt. Palgongsan, Gunwi-gun, Bugye-myeon, Namsan-ri, 15 Jul 2015, Suh SJ; 2♂1♀, Gunwi-gun, Hyoryeong-myeon, Hwagye-ri, Jun 28, 2015, Suh SJ.

Distribution. Korea (new record), Japan (Hokkaido, Honshu).

Remarks. This species can be distinguished from the other species by a stout second costal section in males and the wing spot pattern.

²**Scatella (Scatella) obsoleta* Loew, 1861

Scatella obsoleta Loew, 1861: 358 (type locality: USA, Washington).

Scatella callosicosta Bezzi, 1895: 70 (type locality: not given); Suh and Kwon, 2006: 216; Paek et al., 2010: 238; Han et al., 2014: 82.

Scatella strandi Duda, 1942: 31 (type locality: Russia, Kurischen Haff).

Distribution. Palearctic: Korea, Finland, Germany, Great Britain, Italy, Japan, Lithuania, Morocco, Norway, Poland, Russia, Sweden, Switzerland; Nearctic: Canada.

³**Scatella (Scatella) nipponica* Miyagi, 1977

Scatella nipponica Miyagi, 1977: 93 (type locality: Japan, Omaezaki); Suh and Kwon, 2006: 218; Paek et al., 2010: 238; Han et al., 2014: 82.

Distribution. Korea, Japan.

⁴**Scatella (Scatella) paludum* (Meigen, 1830)

Ephydra paludum Meigen, 1830: 118 (type locality: not given).

Ephydra leucostoma Meigen, 1830: 121 (type locality: not given).

Scatella sorbillans: Haliday, 1839: 409 (type locality: not given).

Scatella paludum: Becker, 1902: 310; Suh and Kwon, 2006:

Korean name: ¹*날개알락물가파리 (신칭), ²*날개흑알락물가파리, ³*갈색알락물가파리, ⁴*회색알락물가파리

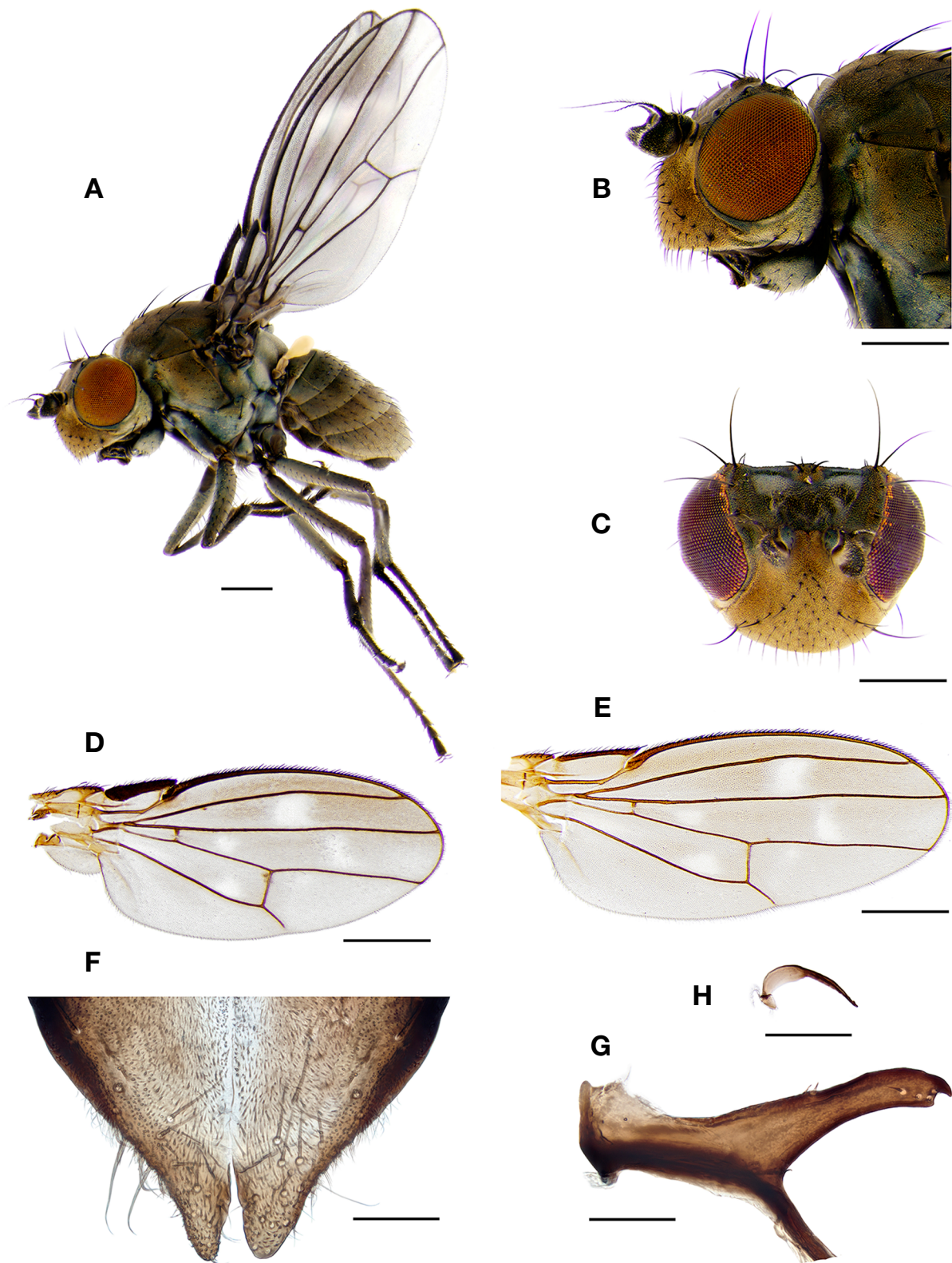


Fig. 1. *Scatella calida* Matsumura, 1915, male. A, Habitus; B, Head, lateral view; C, Head, front view; D, Wing; E, Female wing; F, Epandrium, dorsal view; G, Hypandrium and gonite, lateral view; H, Phallapodeme, lateral view. Scale bars: A-E=0.5 mm, F-H=0.1 mm.

218; Paek et al., 2010: 238; Han et al., 2014: 82.
Ephydra (*Ephydra*) *argyrostoma* Stenhammar, 1844: 176
 (type locality: Sweden, Ostrogothia).

Distribution. Palearctic: Korea, Algeria, Austria, Azores, Belgium, Bulgaria, Canary Islands, Cyprus, Czech Republic, Denmark, Egypt, Faroe Islands, Finland, France, Germany, Great Britain, Hungary, Iceland, Ireland, Italy, Japan, Madeira Islands, Mallorca, Malta, Morocco, Netherlands, Norway, Poland, Romania, Russia, Slovakia, Sweden, Switzerland, Ukraine; Afrotropical: South Africa, Zaire; Nearctic: Canada, USA; Neotropical: Mexico, West Indies. Oriental: Japan (Ryukyus).

¹**Scatella* (*Scatella*) *tenuicosta* Collin, 1930

Scatella (*Scatella*) *tenuicosta* Collin, 1930: 136 (type locality: Great Britain, Essex).
Scatella (*Scatella*) *thermarum* Collin, 1930: 138 (type locality: Iceland, Sudhur).
Scatella stagnalis (nec Fallén, 1813): Suh and Kwon, 2006: 218; Paek et al., 2010: 238; Han et al., 2014: 82.

Distribution. Palearctic: Korea, Austria, Bulgaria, Czechoslovakia, Finland, France, Germany, Great Britain, Greece, Hungary, Norway, Spain, Sweden, Turkey, Tunisia, Yugoslavia; Nearctic: Greenland, USA.

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